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TI New protein useful in treating metabolic disorders of bone which has affinity to osteoclast formation repressor.
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NOVELTY - A protein is new and has affinity to an osteoclast formation repressor **osteoclastogenesis inhibitory** factor (**OCIF**). Binding occurs at the four areas which are rich in cysteine existing in the N terminal of **OCIF**. The molecular weight of **OCIF** is 140,000 plus or minus 10,000 KDa and **OCIF** monomer is 200,000 plus or minus 20,000 KDa which are determined by SDS-polyacrylamidegel electrophoresis. The physiological function of the protein is to suppress the activity of **OCIF**. DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for: (i) the manufacture of the protein using film fraction obtained from a matured osteoclast. The membrane protein is solubilized using a surfactant and refined using **OCIF** fixation affinity column; (ii) screening of a substance which guides the expression of the protein from an animal cell; (iii) screening of the substance which suppresses the expression of the protein from an animal cell; (iv) screening of the substance (bound to the protein) which promotes the bone resorption activity of an osteoclast; (v) screening of the substance (bound to the protein) which suppresses the bone resorption activity of an osteoclast; (vi) screening of the substance (bound to the protein) which promotes the bone resorption activity of an osteoclast by **OCIF**; and (vii) screening of the substance (bound to the protein) which suppresses the bone resorption activity of an osteoclast by **OCIF**.

USE - For treating and preventing metabolic bone disorders and as pharmaceuticals (claimed). The protein treats metabolic bone disorders such as osteoporosis, hypercalcemia, bone pay jet disease, renal osteodystrophy, rheumatoid arthritis, arthritis deformans. The proteins are also used as diagnostic and research reagent. ACTIVITY - Osteopathic; antirheumatic; antiarthritic. MECHANISM OF ACTION - Binds to the osteoclast formation repressor **OCIF** especially at the four areas rich in cysteine in the N terminal of **OCIF** and suppresses the activity of **OCIF**. I125 label of **OCIF** solution was prepared by applying Iodogen method and was purified. The radio activity of the fraction which precipitated trichloroacetic acid was noted as 10%. Next the concentration of the solution was measured using rabbit anti **OCIF** polyclonal antibody obtained by a method as described by WO96/26217. Osteocytes of rabbit which were cultivated for 1 night in 24 wells plate using alpha -MEM containing 5% of foetal bovine serum (FBS) was used. **OCIF** quantity coupled into the cell was measured using gamma counter. The result showed that the protein was a film binding protein expressed on an osteoclast. The test revealed the specific binding of I125 label **OCIF** to the osteoclast.

ADVANTAGE - The protein as a pharmaceutical shortens the period of treatment of bone diseases, producing less side effects. Effective treatment is enabled.

NEW PROTEIN, ITS PRODUCTION AND USE THEREOF

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Equivalents:

Abstract

PROBLEM TO BE SOLVED: To obtain a new protein having affinity for osteoclastogenesis inhibitory factor (OCIF) and specifically binding thereto and to provide a method for producing the protein.
SOLUTION: This new protein is obtained by solubilizing a membrane fraction of mature osteoclast and purifying the fraction by using an OCIF immobilized column. The protein has M.W. of about 140,000 (SDS-polyacrylamide gel electrophoresis under nonreducing condition). A substance for inducing and/or inhibiting a bone absorption activity of osteoclast can be screened by using the new protein or a cell expressing the protein. The new protein or the screened substance can be used for study, a diagnosing reagent, a medicine, or the like, for bone dysbolism.